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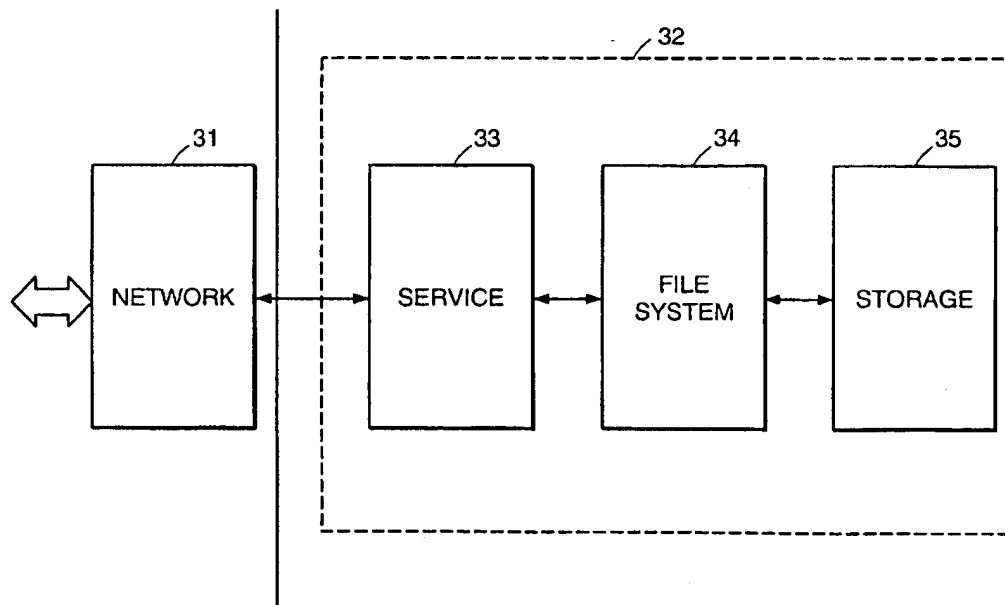
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For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: APPARATUS AND METHOD FOR HARDWARE IMPLEMENTATION OR ACCELERATION OF OPERATING
SYSTEM FUNCTIONS



(57) Abstract: An apparatus in one embodiment handles service requests over a network, wherein the network utilizes a protocol. In this aspect, the apparatus includes: a) a network subsystem for receiving and transmitting network service requests using the network protocol; and b) a service subsystem, coupled to the network subsystem, for satisfying the network service requests. Also in this aspect, at least one of the network subsystem and the service subsystem is hardware-implemented; the other of the network subsystem and the service subsystem may optionally be hardware-accelerated. A variety of related embodiments are also provided, including file servers and web servers.

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04L29/06 G06F17/30 G06F13/12

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G06F H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, IBM-TDB, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 355 453 A (BLIGHTMAN STEPHEN E ET AL) 11 October 1994 (1994-10-11)	1-8, 11-13, 15-19, 22,23, 40-43, 52-54, 56,69, 71-75,77
A	abstract column 4, paragraph 3 column 8, paragraph 4 - paragraph 5 column 10, paragraph 1 -column 11, paragraph 4 column 8, paragraph 4 - paragraph 5 -/--	9,10,14, 20,21, 24-39, 44-51, 55, 57-68, 70,76

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
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T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 00/10277

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>EP 0 725 351 A (IBM) 7 August 1996 (1996-08-07)</p> <p>abstract page 3, line 41 - line 51 page 4, line 48 - line 54 figure 1</p>	1-8, 22, 23, 40-42, 69, 71, 72, 74, 77
A	<p>US 5 875 297 A (YUGAWA TAIHEI ET AL) 23 February 1999 (1999-02-23) abstract column 2, paragraph 4 column 3, paragraph 2 - column 4, paragraph 1</p>	1-77
A	<p>EP 0 853 413 A (SUN MICROSYSTEMS INC) 15 July 1998 (1998-07-15)</p> <p>abstract column 2, line 23 - line 46 column 4, line 21 - line 34 column 5, line 14 - line 18 claim 1</p>	9, 10, 14, 26, 27, 38, 39, 50, 51, 57, 58
X	<p>US 5 754 771 A (VAN COUVERING DAVID W ET AL) 19 May 1998 (1998-05-19) abstract</p>	64
A	<p>column 3, line 50 - column 4, line 9 column 7, line 46 - column 8, line 10 figure 6</p>	65-68

INTERNATIONAL SEARCH REPORT

International application No.
PCT/EP 00/10277

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-63,69-77

Apparatus and System determining appropriateness of service requests

2. Claims: 64-68

Process using a number of threads independent of the number of clients

Information on patent family members

In International Application No

PCT/EP 00/10277

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5355453	A	11-10-1994	US 5163131 A	10-11-1992
			US 5802366 A	01-09-1998
			US 5931918 A	03-08-1999
			AT 163485 T	15-03-1998
			AU 647414 B	24-03-1994
			AU 6412590 A	08-04-1991
			AU 670376 B	11-07-1996
			AU 6590594 A	01-09-1994
			CA 2066443 A	09-03-1991
			DE 69032069 D	02-04-1998
			EP 0490973 A	24-06-1992
			EP 0837402 A	22-04-1998
			HK 1011772 A	28-04-2000
			IL 95447 A	30-05-1994
			IL 107643 A	14-05-1996
			IL 107644 A	31-12-1995
			IL 107645 A	12-09-1996
			IL 107646 A	18-03-1997
			IL 116288 A	08-02-1998
			JP 5502525 T	28-04-1993
			KR 201574 B	15-06-1999
			WO 9103788 A	21-03-1991
<hr/>				
EP 0725351	A	07-08-1996	US 5630059 A	13-05-1997
			JP 8288941 A	01-11-1996
<hr/>				
US 5875297	A	23-02-1999	JP 3123012 B	09-01-2001
			JP 8242254 A	17-09-1996
<hr/>				
EP 0853413	A	15-07-1998	CN 1190215 A	12-08-1998
			JP 10260749 A	29-09-1998
			SG 77151 A	19-12-2000
<hr/>				
US 5754771	A	19-05-1998	NONE	
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